## **ABSTRACT**

The present invention provides methods for the asymmetric synthesis of (S,S,R)-(-)-actinonin and its analogs and the compounds thereby synthesized having a structural formula:

$$R^1$$
 $R^2$ 
 $R^3$ 
 $R^4$ 
 $R^5$ 

where R<sup>1</sup> is an optionally substituted or halogenated alkyl, aryl, heteroalkyl or heteroaryl amine, said R<sup>1</sup> further comprising a cyclic or bicyclic structure; R<sup>2</sup> is methyl, CH<sub>2</sub>CH<sub>3</sub>, (CH<sub>2</sub>)<sub>2</sub>CH<sub>3</sub>, C(CH<sub>3</sub>)<sub>3</sub>, phenyl, 3,4-dichlorophenyl, biphenyl, benzyl, 4-hydroxybenzyl, piperidine, N-Boc-4-piperidine, CH<sub>2</sub>-(N-Boc-4-piperidine), 4-tetrahydropyran, CH<sub>2</sub>-4-tetrahydropyran, 3-methyl indolyl, 2-naphthyl, 3-pyridyl, 4-pyridyl, 3-thienyl; R<sup>3</sup> is R<sup>2</sup> or C<sub>3</sub>. salkyl, R<sup>4</sup> is C<sub>1-3</sub>alkyl; and R<sup>5</sup> is NH<sub>2</sub>, OH, NHOH, NHOCH<sub>3</sub>, N(CH<sub>3</sub>)OH, N(CH<sub>3</sub>)OCH<sub>3</sub>, NHCH<sub>2</sub>CH<sub>3</sub>, NH(CH<sub>2</sub>CH<sub>3</sub>), NHCH<sub>2</sub>(2,4-(OCH3)<sub>2</sub>Ph, NHCH<sub>2</sub>(4-NO<sub>2</sub>)Ph, NHN(CH<sub>3</sub>)<sub>2</sub>, proline, or 2-hydroxymethyl

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pyrrolidine. Additionally, a method for the treatment of a neoplastic disease or for the inhibition of tumor cell growth each comprising the step of administering to an individual in need of such treatment a pharmacologically effective dose of the compounds of the present invention are provided.